

Literature Review of Strategies for the implementation of learning technologies in organizations

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Abstract. The performance and survival challenges faced by many organizations require dynamic capabilities and tools to accelerate the acquisition of those capabilities. Organizations are continuously looking at their learning strategies as a key factor to prepare their human capital for the rapid changes and demands. Learning Technologies are positioned as an enabler that provides different opportunities to learn and that is why they are so important. The design of strategies for the implementation of learning technologies in organizations is hard to be overviewed. Only a few contributions address technology as a crucial point to accelerating performance, innovation, and competitiveness. In this research, we will focus on the strategic implementation of learning technologies. The approach we chose to solve this problem is to develop guidelines that support the strategy for the implementation of technology in the learning field. This approach will allow us to relate the strategy with the challenges faced and the impact that the organization is expected to achieve.

Keywords: Learning Organizations, Technologies, Learning & Development

1 Introduction

In every organization, there are challenges on how they adapt to their environment in order to sustain their survival or to increase their influence (Alamsyah & Peranginangin, 2014). There is increasing acceptance that in order for employees to keep up with constant change and for businesses to stay relevant, learning and development have to move to the heart of the business.

Organizations must go through a learning transformation to realize this vision (Aberdour, 2016), and they are continuously looking at their learning strategies as a key factor to prepare their human capital for the rapid changes and demands. If organizations want to fulfill organizational learning and knowledge management functions, they are required to establish structures, processes, and strategies to enhance learning behaviors at the individual, team, and organizational levels, to foster a learning environment or culture, where people are encouraged to engage in continuous learning, and the outcomes of their learning activities are managed and used to attain sustainable competitive advantage (Ruel et al., 2021).

Learning strategies are not oblivious to the technology's evolution. As Kelly Palmer (CLO at Degreed) mentioned "In the past five years, the world of work has dramatically changed, and technology plays a huge part" ("Career Advice from Kelly

Palmer: Chief Learning Officer, Degreed,” 2020). The learning organizations should devise a technology-based mechanism for their organizational learning development. For the better production of organizational learning, different databases and knowledge management systems should be developed to capture, store, disseminate, and share organizational knowledge and experiences among knowledge workers” (Kang et al., 2021). There are, however, challenges. The corporate learning industry becomes more massive every day. More than \$280 billion is spent on training, upskilling, and professional certification programs and there are now many billions of dollars spent on collaborative learning platforms, content, skills tech, and industry solutions. (Bersin, 2021). According to the SierraCedar report, companies often have ten different platforms for learning and overall spending on HR technology is several thousand dollars per employee per year (often more than is spent on training and enablement). Yet, companies need to make sure they get a positive return on these investments (Bersin, 2021). The world of educational technology in the twenty-first century is one that remains filled with caveats, concerns, and an assortment of unknowns. Some raise cautionary flags over the cost justifiability of different technologies tools and applications. Others sound alarms over their practical implications. Still, others ask whose needs are being served and for what purposes they adopt or integrate a particular technology tool or application into our instruction (Bonk & Wiley, 2020).

Technology adoption and strategy renewal need to emerge in parallel and inform one another. We hypothesize indeed that a firm cannot devise a new strategy without assessing the real potential of new technologies and its ability to acquire the necessary skills and resources, and conversely that it cannot adopt every new piece of digital technology without a strategic plan to leverage it (Bughin et al., 2019). Strategy implementation (SI) is therefore a critical component of why some firms outperform others as even a well-formulated strategy cannot guarantee success until it is effectively implemented. SI differs from strategic formulation (SF); while SF is related to planning and decision making, SI is the translation into reality of that strategic intention (Tawse & Tabesh, 2021).

2 State of Art

2.1 How we learn at work

According to Malcolm Knowles, andragogy is the art and science of adult learning, thus andragogy refers to any form of adult learning (Kearsley & Knowles, 2010). Knowles (1984) added 5 assumptions about the characteristics of adult learners: self-concept, adult learner, readiness to learn, orientation to learning, and motivation to learn. Based on these characteristics, Knowles (1984) also mentioned that in order for learning to succeed, adults need: to be involved in the planning and evaluation of their learning, to experiment (and therefore a practical side of their learning needs to be presented), to have immediate relevance and impact in their job. Taking andragogy principles to the context of an organization we observe that learning happens in the pace of work and not only in the classroom. Nowadays Organization and HR practitioners are moving from conventional learning to more practical learning, innovative and informal learning which make employees productive, engaged, responsible, and ensures the longevity of the organization (Sharma & Goyal, 2021). There are several approaches to learning that evolved throughout the years, in this research we will detail three approaches based on the 70:20:10 framework.

The 70:20:10 framework is a perspective on the different ways of learning at work. Most of what we learn comes to us via experience, a smaller part from other people, and the minority from structured courses and programs. This is a game-changer to Learning & Development (L&D) professionals that need to work in opportunities for safe practice, group work, and experiential rather than just the formal delivery (formal learning). The leading proponent of the 70:20:10 framework, Charles Jennings, pointed out that this is for thinking and action and therefore to change, rather than a rigid model about numbers (Taylor, 2019).

2.2 Learning Organization

The meaning of a Learning Organization has changed over the years. David Garvin had defined Learning Organization as “an organization skilled at creating, acquiring, and transferring knowledge, and at modifying its behavior to reflect new knowledge and insights” (Garvin, 1998).

Peter Senge defines learning organizations as places “where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together” (1990, p. 1). Peter Senge (1990) in his book “The Fifth Discipline” has mentioned the following characteristic of a learning organization: shared vision (the common goal), system thinking (analysis correlated and not done individually), team learning (learning of the whole team rather than the learning of an individual), personal mastery (an employee put efforts to learn so that he can bridge the gap between his knowledge and skills and the knowledge and skills required for the task at hand) and mental models (what employees think about the organization and its goals).

The conditions needed for organizational learning to develop are a supportive learning environment, concrete learning processes, and practices, leadership behavior that reinforces learning (Andrews & Smits, 2019).

Nowadays, more and more organizations are becoming learning organizations to stay ahead in the competition, because they need to continuously adapt and learn new skills and processes. It's vital to give emphasis on learning, which is tuned with the goals of the organization (Bhasin, 2021).

2.3 Learning Technologies

Learning technologies are a key ally of learning organizations. It became clear that successful learning technology implementations are not a matter of chance. By the same token, failed implementations usually happen for reasons that are predictable and preventable.

Although in the 21st-century information technology has developed massively the understanding of the role of learning technologies has not. In general, it is still regarded simply as a way of being more efficient in delivering, storing, and distributing information. (Taylor, 2017). Back to the end of the last century, it's true that learning technologies were related to the proliferation of online learning - eLearning. The premise that it would be as good as classroom training but cheaper and faster to reach all learners was common. This legacy of cost-cutting measures continued for several years but nowadays Learning Technologies are more than that. Technology is both an important enabler and an unrelenting taskmaster. It makes much possible, but also sets a pace of business that demands employees know more and faster (Shepherd, 2015). The only way it can do that effectively and keep pace with the modern world is by using a range of learning technologies that bring impact to the organization. The enormous market for training and learning tools is very fragmented. Today there are more than 200 Learning Management Systems (LMS) vendors, more than 30 Learning Experience Platforms (LXP) vendors, and thousands of vendors who build collaboration tools, mobile learning tools, content development tools, and analytics tools. (Roughly 12% of the \$240 billion corporate training market is spent on tools) (Taylor, 2017). In this research, we will group the learning technologies in:

- Learning Experience Platforms (LXP): AI-driven peer learning experience platform for development. Combines personalized learning with curated and aggregated content by learners.
- Learning Management System (LMS): learning platform to track, record, and report learning data. An LMS delivers and manages all types of content, including video, courses, and documents.
- Content Management System (CMS): it's a more passive platform than the LMS because it is mostly used to view documents.
- Knowledge Management System (KMS): technology that helps teams gather, organize, and share information across a business and for its customers. It may be connected to learning technologies or collaborative tools.

All the other platforms that may be integrated into the LMS, LXP, CMS, or KMS can be social platforms, micro-learning platforms, assessment platforms, Virtual Reality tools, content libraries, etc.

3 Systematic Literature Review

In this paper we performed our Systematic Literature Review (SLR) guided by Kitchenham's Procedures for Performing. The objective was to summarize the main challenges faced by organizations, to identify the existing evidence concerning the learning technologies, to identify any gaps in current research, and last but not least to provide a framework/background to appropriately position this research. The stages of an SLR adapted to this research are described in Figure 1.



Fig. 1. Stages of the Systematic Literature Review adapted to this research

The detail of each stage are the following:

3.1 Planning

In this section, the SLR planning is detailed. Motivation and review question is specified, protocol review is presented and inclusion and exclusion criteria are identified.

Research Motivation. Implementation of learning technologies is an ongoing practice done in several organizations. We are in a context where learning technology is evolving faster and learning strategies are closely connected with the technologies selected. However, since the implementation of technologies is a combination of different areas (IT, Management, Talent) there is a lack of reference models that can guide this implementation to succeed. This work intends to get information regarding the challenges that organizations are facing, the technologies being implemented, and their impact on the organization's field.

Research Questions (RQ). The aim of this systematic review is to answer a basilar question: RQ1 - What strategies should organizations have in consideration for the implementation of learning technologies?

In order to achieve this objective, three main areas of analysis were formulated:

- Main challenges that organizations are addressing
- Common learning technologies being used or recommended
- Impact (return on investment/benefits) of implementing learning technologies

Review Protocol. Given the research goals of this review, Population, Intervention, Comparison, Outcomes and Context (PICOC) was defined, using the following components:

- Population: Organizations,

- Intervention: Technology, Systems and Platforms
- Comparison: not applicable
- Outcome: Learning Strategies

Based on the PIPOC analysis the search string used to perform the search are listed below.

Search String: organizat AND (“learning management system*” OR “content management system*” OR “knowledge management system*” OR “learning experience platform*” OR eContent OR “mobile learning” OR mlearning) AND (technolog* OR system* OR platform* OR “learning strateg*”) AND (“learning culture” OR “learning organizatio*”) NOT (“high* education” or “universit*” or “college*” or student*)*

The chosen datasets were SCOPUS, EBSCO, and B-ON.

The “*” sign was used at the end of some keywords to expand the range of possible studies. In SCOPUS instead of operator NOT it was used AND NOT.

Inclusion and Exclusion Criteria. In order to filter the obtained papers after the search string application, different inclusion and exclusion criteria were defined. The criteria for inclusion considered are records: Related to organizations and learning technologies, revised by peer review, from Academic Magazines, Journal, Articles, Reports, and Books, related to high education, university. Related to projects focus on TQM (Total Quality Management), not in English nor fully available, and published before 2015. The review protocol process is illustrated in Figure 2.

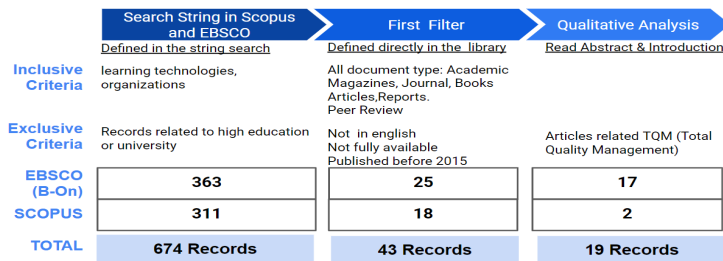


Fig. 2. Review Protocol

3.2 Conducting

This Section concerns the second phase of the Systematic Literature Review Methodology. The documentation management of all studies reviewed was done on Mendeley, an open-source desktop application to search and organize all references.

Selection of Studies. As a first action, the search string was used in EBSCO, Scopus, and B-On Database. An exclusion criteria was defined in the search string due to the high volume of records found in the first results. Secondly, the exclusion and inclusion criteria were applied directly in the databases to perform the first filter. Afterward, a qualitative analysis was performed and all abstracts and introductions were screened in order to decide their relevance to the research. A final set of papers was obtained which is the final selection of studies to perform the review.

Data Extraction Analysis. Considering the 19 resources selected, we analyzed that an almost gradual increase of articles published is observed since 2015 but with a substantial decrease in 2021. We also analyzed that the subject is common to different areas, having a stronger highlight in Business and Management Theories. Considering that the implementation of technologies is also an important subject in the field of computer science, it's surprising that this domain does not have a higher number of documents.

3.3 Reporting

This Section concerns the last phase of a Systematic Literature Review. In this section, we present the answers to our Research Questions. Table 1 shows an overall view of the documents, and the created cluster of the findings per Research Questions. The detailed analysis will follow in the next chapter, the Conclusion.

Table 1. Comparison of QRs and number of cited findings.

Research Questions	Findings	Nr
1.1 Challenges	Continuous Knowledge/Skills Management	11
	Employee's engagement growth	4
	Technological: System Integration	1
	Disalignment between system and business	2
	Great Resignation	1
	Technological Fast Evolution, Continuous Change	4
1.2 Technologies	Specialized online social media platform	2
	Knowledge Management System (theoretical)	3
	CMS, eLibraries, eLearning platforms	2
	Learning Experience Platform	3
	Learning Management System	3
1.3 Impact	Diversity in the type of content	1
	Decision Data-Driven (Report)	3
	Increased efficiency	4
	Easily convert and share knowledge	4
	Cost reduction	2
	Building knowledge communities,	1
	Curation, Advanced search, Skills framework,	2
	User-generated content (UGC)	2

4 Conclusion

4.1 Main challenges

All the challenges presented in this document were analyzed from a learning & development perspective.

Continuous Knowledge/Skills Management. There is a strong emphasis on the knowledge management and the need to develop and retain skills in the majority of the documents analyzed. Knowledge sharing is crucial for a successful business, as it helps in attaining competitive advantage and encourages sharing attitude by helping others with regard to various tasks and processes within the workplace. (Anand & Hassan, 2019 as cited in Meher & Mishra, 2019). We also have an imperative to learn how to learn as an ongoing capacity and capability that can enable us to diagnose, create, and adapt iteratively. The larger an organization gets, the harder it is to maintain, organize, and disseminate the knowledge it takes for the organization to run effectively and efficiently. (Bergquist and Mura, 2005, Connor, 1998; Stout-Rostron, 2014; Johansen, 2012 cited by Lazar & Robu, 2015)

This is a challenge that affects the different layers of the organizations and areas. In Macuglia Spanemberg (2020) we find the importance of knowledge management to the shop floor: *“The literature recognizes the importance of managing shop floor knowledge and capabilities as a means to create a long-term competitive advantage. Organizations need to adopt a strategic approach to manage the knowledge of workers, because high performance connects to tacit knowledge, to keeping employees that possess this knowledge, and to the ability to continuously reap their knowledge and skills (Kiessling and Harvey, 2006).”* In Müller et al. (2021) knowledge management is analyzed in high-reliability organizations (HROs): *“Knowledge is of central importance to organizations operating in security-critical environments. The focused transfer of relevant knowledge is necessary for successful emergency operations, which often take place under completely unequal conditions. Hence, knowledge is always relevant for HROs when it comes to the performance of their core task: Emergency response.”*

The same tendency is found in the Knowledge Intensive Companies (KICs). For such organizations, their intellectual capital, people, is often their only or most precious and valuable asset. Organizational leaders are also challenged with ensuring that their intellectual capital, their knowledge talent, is retained – that competitive edge is kept within their organizational boundaries. (Millar et al., 2017). Mount Sinai Hospital’s Department of Social Work Services Department is also committed to recruiting and developing the most talented social workers to best meet the needs of patients and family caregivers and to serve as integral, valued members of interdisciplinary care teams. Traditional learning methods are insufficient for a staff of hundreds, given the changes in health care and the complexity of the work.

(Xenakis, 2018) The Indian Economy is also identified in Meher & Mishra (2019): *“The real challenge arises when it comes to the retention of knowledge sources. The intellectual capacities that reside in an individual's mind are the most important catalyst for knowledge creation.”* AT&T confirms the same challenge *“We knew that engaging and reskilling our current employee base to bring them along was the right thing to do for many reasons - not least of which was providing those who have helped to build AT&T an opportunity to grow and succeed along with the company.”* said the Senior Executive Vice President of Human Resources, Bill Blase (Hassel, 2017).

Employee engagement and growth. *“Developing a learning culture is no longer just another fanciful idea. It is becoming more imperative for companies to cultivate learning if they wish to stay in business”* (Tala A. Nabong, as cited in Balavadze & Zhgenti, et al., 2018). The employee's engagement can also be seen from the perspective of the disengagement. A lack of efficiency in the knowledge management system is the result of the knowledge workers' differing perspectives regarding the value of such systems rather than a disinclination to share, and/or is knowledge hiding part of the way they work (Millar et al., 2017).

Dealignment between system and business. Organizations implement a KMS claiming that it will result in better organizational effectiveness, efficiency, and competitiveness (Schultze and Leidner, 2002, as cited in Cerchione et al., 2020). Yet, KMSs can also have backfires. For instance, the detachment of the knowledge from its source could favor knowledge imitation from those competitors that have a good absorptive capacity (Shin, 2004, as cited in Cerchione et al., 2020).

Technological: System Integration. It can be challenging for learning leaders to actively manage and tell a convincing story about the digital tools and platforms an organization has in their portfolio. Consequently, an integrated roadmap or comprehensive point of view on how to create world-class learning experiences, to enable teams to rapidly build and iterate content and courses, and rigorously measure outcomes may be an issue. And that means that the ecosystem in place is not the right to enable and track the behavior and mindset shifts needed to achieve employees' performance goals and execute business strategy. (Murray M. & Nielsen N., 2019).

Technological Fast Evolution, Continuous Change, competition. Organizations, especially those reliant on sophisticated knowledge management, face an array of challenges due to dynamic complexity, technological change, and international competition (Grant, 2010, as cited in Andrews & Smits, 2019). Technological advancement in the way we work brings digitization of work that enabled individuals to connect to each other from one location to another and enabled the outsourcing of production formerly done in one location to a dispersed set of global locations. (Millar et al., 2017).

Great Resignation. According to the U.S. Bureau of Labor Statistics, 4 million Americans quit their jobs in July 2021 (Cook, 2021). Losses of knowledge resulting

from turnover caused by workers resigning and going after jobs at competitors, dismissal for the excess of the workforce, or retirements, expose the organization to risks. Employees may possess rare skills that are difficult to reproduce, in addition to critical knowledge about the company (Whelan & Carcary, 2011 cited by Macuglia Spanemberg et al., 2020). Specialized professionals who are not duly recognized or given opportunities for growth may leave the company for better development opportunities, with consequent loss of knowledge for the organization. (Macuglia Spanemberg et al., 2020).

4.2 Learning Technologies implemented

We observed that not all learning challenges have addressed a strategy that connects with technological implementation. A systematic map to understand the impact of investing in knowledge for a production line, and correlations between the main variables were defined when looking for knowledge management (Macuglia Spanemberg et al., 2020). The same was done in Müller et al. (2021) where it described factors influencing the transfer of operational knowledge and what a conceptual framework might look like in this context.

Learning Management System (LMS). Three LMS implementations were found. Balavadze & Zhgenti, (2018) described the implementation of a Moodle-based Learning Management System (LMS) as a knowledge-sharing platform to promote experience sharing in the Bank of Georgia. The Vice President at AT&T, John Palmer, shared in an interview with Profile magazine that in order to set a strategy of reskilling their human capital, a new learning management system was implemented (Hassel, 2017). Developed in 2012, the Portal for Education and Advancement of Knowledge (PEAK) is Mount Sinai Hospital's Department's Learning Management System (LMS). PEAK disseminates knowledge to wide learning audiences across its health system. (Xenakis, 2018).

Specialized online social media platform. An enterprise social network (ESN) is a specialized online social media platform in organizations that allows employees to form online communities and streamline connections across different functional departments. The success of applying ESNs in promoting knowledge sharing and learning among individuals highly depends on many different technological, organizational, social, and individual factors (Chin, Evans, and Choo 2015 cited by Sundaresan & Zhang, 2020).

Content Management Systems (CMS), eLibraries, eLearning platforms. In practice, an e-learning system is often utilized to foster professional development as it is capable of delivering information and knowledge to individuals across organizations. More than half (63%) of corporations in South Korea implemented an e-learning system in 2011. Approximately 52.8% of individuals in South Korean corporations participate in e-learning (National IT Industry Promotion Agency, 2011 mentioned in Yoo & Huang, 2016). Another organizational example of the usage of external content providers is AT&T that in 2013, offered an online master's degree in computer science as a means to develop future tech talent but also to equip its own employees with critical skills for their business. (Hassel, 2017)

Learning Experience Platform (LXP). LXP has arisen to present a next-generation front end to the plethora of available learning opportunities. At first, this meant looking more modern - a cleaner, more consumer-grade user experience. The best LXPs align this with organizational strategy, working to identify those skills that are both urgent and important to be improved upon for the benefit of an individual's career and an organization's plan. (Betts, 2020) With LXP, learners receive personalized content recommendations. They can also be given the option of adding content they believe is relevant to their learning experience. Learners experience content in a way that is familiar to them, such as the delivery mechanisms on streaming websites such as Netflix. LXPs put the user in charge of command and control. (Tassetto, 2019). In the same case study mentioned in the previous topics of the RQs "Technology", AT&T has also launched the Personal Learning Experience platform that allows employees to plan, access, view, manage and track their learning. It also allows them to search for jobs based on their current competencies (Hassel, 2017).

4.3 Impact of implementing learning technologies

As a result of the implementation of Moodle in the Bank of Georgia, it was observed an increase in efficiency, productivity, and profit, where each employee takes part in the knowledge and experience sharing process and feels ownership and accountability for the organization's accomplishments. It also brings new forms of learning for professional/position-related skills and knowledge enhancement (video, tutorials, and instructions). The reporting capabilities are also a benefit.

The LMS allows installing plug-ins that give very valuable analysis regarding each employee. (Balavadze & Zhgenti, 2018).

In terms of its impact on knowledge sharing, digital technologies enable knowledge workers to easily convert their tacit knowledge and share it in the network with video and audio tools (Panahi, Watson, and Partridge 2013 cited by Sundaresan & Zhang, 2020).

E-learning systems are gaining in popularity in the workplace due to their many advantages. They support learning while creating, sharing, and transferring knowledge across organizations. E-learning systems also enable organizations to update their capabilities worldwide and deliver consistently high learning material in various formats (Biech, 2008, Jia et al., 2011, Liebowitz & Frank, 2011 cited by Yoo & Huang, 2016). However, there are also downsides in the digital content that needs to be analyzed. For example, the current average completion rate for MOOCs (massive open online courses) averages as low as 15%. Such poor rates make training budgets a wasted and expensive resource (Tassetto, 2019).

In 2019 analyst firm Gartner identified LXPs as a market segment in corporate learning suites, reflecting LXPs position in the corporate learning environment and differentiating it from traditional LMSs. (Tassetto, 2019). It is difficult to provide up-to-date curriculums and content across the entire business from a top-down perspective. We simply cannot create content and learning experiences fast enough to keep pace with business and industry changes. Therefore, we find ourselves needing to shift the corporate mindset from one of waiting to be taught toward a culture of daily learning that is autonomous and self-directed. (Betts, 2020)

5 Future Work

It was possible to take several relevant pieces of information from our Systematic Literature Review based on our selected papers. For effective and efficient dissemination of information, Information Technology (IT) and Information and Communication Technology (ICT) are indispensable. (Fazal, 2017).

A topic that has not yet sufficiently been researched is how technologies can respond to the challenges that organizations are facing. The majority of the literature approaches the questions from a structural perspective where the root cause is in the internal organization and behaviors observed. Technology is seen as a resource that can leverage the internal organization but not as the conductor of the needed transformation. Learning Technology identification and strategy to implement it needs to come together. Capabilities of the information system and characteristics of the organization, its work systems, its people, and its development and implementation methodologies together determine the extent to which that purpose is achieved (Silver et al. 1995). We will continue this research by exploring the research problem: the lack of a coherent and comprehensive approach that combines the challenges that organizations are facing with the implementation of learning technology that drives the change needed. We propose a synergistic relationship among four fields: the challenges of organizations, the implementation of learning technologies, the strategy that supports that implementation, and the results (impact) expected. Considering that many learning technologies implementations lack empirical support, our future work intends to improve the effects and efficacy of these implementations. We will base our research on the Survey. The data will be collected and analyzed, and the final report will be prepared and communicated.

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